HOUSING INEQUALITY UNDER MARKET TRANSITION IN URBAN CHINA: EVIDENCE FROM THE 2005 MINI CENSUS

by

Bin Liang

A thesis submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Master of Science

in

Human Development and Social Policy

Department of Family and Consumer Studies

The University of Utah

August 2013

The University of Utah Graduate School

STATEMENT OF THESIS APPROVAL

The thesis of **Bin Liang**

has been approved by the following supervisory committee members:

Zhou Yu	, Chair	**06/20/13** Date Approved
Michael F. Timberlake	, Member	**06/14/13** Date Approved
Jessie X. Fan	, Member	**07/01/13** Date Approved

and by **Russ Isabella** , Chair of the Department of **Family and Consumer Studies**

and by Donna M. White, Interim Dean of The Graduate School.

ABSTRACT

Since the late 1990s, housing reform in urban China has fundamentally transformed the housing delivery system to a market-based one, ending the welfare distribution of housing. The housing reform has been accompanied by rapid urbanization, massive rural-urban migration, and a dramatic increase in housing consumption in urban China. However, not everyone has benefited from the housing reform. Housing has become the single largest source of economic inequality and social tensions in urban China. As the Chinese government continues to promote urbanization as a means of economic development in the next decade, it is necessary to have a clear understanding of the major source of inequality in urban China.

Based on micro data from the 2005 mini census, this thesis examines urban housing in China during the post-reform era, with a particular focus on housing tenure status and housing conditions. Specific attention is paid to the spatial variation of housing consumption across the country and among different demographic groups. The results show that: 1) Commodity housing has emerged as a major pathway to homeownership in urban China, especially in the east; 2) the influence of the socialist housing system is still evident: owning *work-unit* housing remains a dominant form of homeownership and

public rental housing is still prevalent; 3) there are great differences among various socioeconomic groups in housing tenure status and housing conditions; most notably, rural migrants and young people—who have hardly benefited from the pre-reform housing system—are most like to rent private housing in cities and face challenges in attaining homeownership; 4) regression analysis reveals that in the post-reform era, socioeconomic variables such as household income and education attainment have become important factors determining housing outcomes; 5) institutional factors inherited from the pre-reform period such as institutional affiliations and *hukou* status continue to play a prominent role in housing consumption.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

Foremost, I would like to express my sincere gratitude to my advisor Prof. Zhou Yu for the continuous support of my master's study and research, for his patience, motivation and immense knowledge. His guidance helped me all the time of my research and writing of this thesis.

Besides my advisor, I would like to thank the rest of my thesis committee: Prof. Michael F. Timberlake and Prof. Jessie X. Fan, for their encouragement, insightful comments, and hard questions.

I want to thank the Department of Family and Consumer Studies, thanks to my classmates in Human Development and Social Policy Program— Lorayne B. Taylor, Kirsten Threlkeld, Kamille Noor Sheikh, Shirley Whitesel and Austin Strebel—for their support and friendship.

In particular, I am grateful to Merissa Lynn Diener and Bobbi Davis, I cannot imagine how I could complete this program as an international student without your support. I also want to thank Sandy M. Stark for her kindness and great help.

Especially, I would like to give my special thanks to my husband, Felix H. Liao, whose patient love enabled me to complete this work.

1. INTRODUCTION

In the past three decades China has been experiencing a massive transformation in the housing sector and rapid urbanization (Fan, 2005; Wu, 2005). The government launched urban housing reform in the late 1980s as part of the economic reform, aiming to replace the socialist housing system with market mechanisms, to improve the efficiency of the housing market and to reduce the financial burden on the government (Wang &Murie, 2000). Due to rapid economic growth and large scale rural-urban migration, there has been a dramatic increase in the demand for housing in urban China (Wu, 2004, 2007).

The Chinese government has adopted a "gradual and experimental" approach to urban housing reform, with various programs implemented across the country at different times (Deng, Shen & Wang, 2011; Li, 2000b; Tong & Hays, 1996; Wang & Murie, 1996; Zhao & Bourassa, 2003). One of the most important landmarks was the official ending of the welfare housing market distribution system in 1998.[1]Since then, there has been a dramatic increase in both housing consumption and private homeownership (Chen, Guo & Wu, 2011a; Huang & Yi, 2011).

The housing reform has led to the improvement of housing conditions in Chinese cities and a boom in the Chinese housing market. However, at the same time, inequality

[1]The welfare housing system has operated since the founding of People's Republic of China, with the state government being the owner of all urban land. The local governments and state-owned enterprises (*work-unit*) are the users of the property. This system provides urban citizens with low-cost dwelling.

or uneven distribution of housing consumption and homeownership has intensified since the 2000s, symbolizing the rising social inequality that existed during the reform era (Huang & Yi, 2010; Huang & Yi, 2011; Li & Huang, 2006).

The body of literature on China's urban housing is ever-expanding. Scholars have carefully studied the way market reform has affected homeownership and, to a lesser extent, housing conditions among different socioeconomic groups in Chinese cities (Huang, 2004; Huang & Clark, 2002; Wu, 2005). Recent research on urban housing in China has paid more attention to housing behavior among specific groups, which has resulted in a growth in affluent areas(Chen, Hao & Stephens, 2011), gated communities (Xu, 2008; Yip, 2012), second homeownership(Huang & Yi, 2011)and the concentration of urban poor(He et al., 2010; Li & Zhang, 2011; Wang & Wu, 2010; Wu, 2004). Although research on individual cities—most of which is based on data collected in the 1990s— has yielded important insights (Huang, 2004; Yu, 2006), housing markets have grown rapidly in the 2000s, a phenomenon about which we have very limited knowledge.

The geographical variations of housing consumption in China also deserve further study. Researchers have found salient geographical differences in housing quality and living conditions among regions and cities. For example, employing the census data from 1995 and 2000, Yu compared the housing conditions in four autonomous municipalities, namely, Beijing, Shanghai, Tianjin and Chongqing, unfolding a striking intercity difference among housing conditions (Yu, 2006). In addition, housing reform in China also has a spatial dimension. For example, along with the massive interprovincial migration from inland provinces to coastal provinces(Fan, 2005; Hu, Xu & Chen, 2011; Sun & Fan, 2011), governments in coastal provinces have had a difficult time providing

housing for migrants while dealing with the dramatic increase of housing prices(Chen et al. 2011). However, due to the lack of national level data, we have little knowledge about the spatial dimension of housing quality and living conditions across China. Given the top priority of promoting urbanization and restricting the growth of large cities (Li, 2011; Zhao, 2011), it is necessary to study the geographical dimension of China's urban housing markets.

Drawing upon national level census data collected in 2005, this research aims to offer a comprehensive understanding of Chinese urban housing by 1) providing an overall picture of urban housing in China with a particular focus on housing tenure status and housing conditions; 2) comparing the housing situation in different tiers of Chinese cities (first-, second- and third- tier cities) and among different regions (east, central and west); 3) studying and comparing the relative importance of the determinants contributing to housing inequality in urban China including socioeconomic, demographic, institutional and geographical factors. The thesis is organized in six parts. Part 2 briefly summarizes the literature on housing consumption in the West and China; part 3 mainly focuses on two key research questions and a number of working hypotheses in this study. Part 4 addresses some methodological issues with a particular focus on the model specifications. Part 5 presents the results and key findings; this is followed by a brief summary of the key findings and policy implications in part 6.

2. LITERATURE REVIEW

2.1 Research on Housing Consumption in the West

As argued by Yu (2006), the research on China's housing behaviors has been grounded in Western theories. Western housing theories on homeownership and housing conditions are based on market economies. The economic perspective assumes that households are economically rational and choose a certain type of tenure to maximize utilities within a given budget constraint (Arnott, 1987). In this approach, homeownership is not just a consumption decision by households, but is also an investment decision in competitive housing markets. Income, assets and relative prices are considered as the most important factors affecting tenure changes and housing conditions (Edward L., Kahn & Rappaport, 2008; Glaeser, Kahn & Rappaport, 2008; Henderson & Ioannides, 1983, 1986). In general, homeownership and housing conditions increase with household income. Demographic factors are considered to affect tenure status through changing socioeconomic status and not only through the life cycle *per se* (Andersen, 2011; Clark,1996). In contrast, demographers, geographers and sociologists argue that housing consumption is not a simple investment decision, but is a complicated event that is inextricably linked with characteristics of households and changes in the housing market (Clark,1996).

Recent research in the West pays closer attention to the demographic effects on housing consumption. For example, there is evidence that new migrants and young

households, as new housing marking entrants, are more sensitive to the fluctuation in the housing market. The significant demographic changes in most industrialized nations have also contributed to the renewed interests of demographic effects in the West. For instance, in the US, the share of married household couples has decreased to below 50 % of total households in recent years, while the number of nonretired people who live alone has experienced a rapid growth over time (US Census Bureau, 2009a). These demographic changes all have significant impact on housing demand (Myers,1999; Yu & Painter, 2010). Using a number of well-developed qualitative or quantitative approaches, researchers have found that determinants of housing conditions and tenure choices in a market economy include not only structural factors such as socioeconomic status, ethnicity, lifestyle, and gate keeping by real-estate agents, but are also connected with migrants behavioral variables, like length of the migration period, family life cycle, etc. (Portes & Rumbaut, 2001; Yu, Painter & Yang, 2003; Yu & Painter, 2010). From a policy perspective, ensuring a minimum level of housing, encouraging homeownership, reducing racial and economic segregation are basic goals of the housing policy in the US (Richard & Malpezzi,2003). The policies towards affordable housing are also of greater concern (Stephens, 2010).

2.2 Research on Housing in Urban China

Since China launched housing market reform in the late 1980s, there has been a tremendous transformation of housing market in Chinese cities. Urban residents have begun to pay a fair market price for their houses or apartments and the socialist subsidized housing system is no longer a major form of housing in the Chinese housing market. Consequently, housing tenure choices in China in the post-reform era are

complex because China's housing distribution became a hybrid system having both market and socialist (institutional) characteristics (Huang & Clark, 2002). In general, there are six types of housing tenure choices, including: owned self-built housing, owned commodity housing, owned affordable housing, owned *work-unit* housing, public rental housing, and private rental housing. With owner-occupied households, there are four types of ownership. First, people can inherit self-built housing or build houses or apartments by themselves. Second, home ownership can also be achieved by purchasing a commodity housing built by developers. Third, affordable housing provided by local government is a major form of subsidized housing for local residents. Urban local households can purchase housing and own it at prices lower than market, but there is always a long waiting list. The fourth type of home ownership is to own *work-unit* housing. In the pre-reform era, *work-units* provided employees' housing. After China launched the housing market reform, employees in *work-units* such as governments and state-owned enterprises were able to purchase a *work-unit* house and own it at prices lower than market.

Within renter occupancy, there are two types of housing tenure. Public rental housing is another form of subsidized housing provided by local government and is reserved for the lowest income urban local households, which cannot even afford to purchase affordable housing. The lowest income urban household can rent pubic rental housing at a rent lower than market. Private rental housing does not have any requirement of *hukou* status or income.

Against this backdrop, researchers are increasingly concerned about the influence of housing market reform on people's housing tenure status in Chinese cities (Huang &

Clark, 2002; Wang & Murie, 2000). Huang and Clark (2002) performed a nation-wide analysis of the housing tenure status and stressed that the socioeconomic factors such as age, household size, household income and housing price have similar effects on tenure status as in the West, while institutional characteristics such as *hukou*, job rank and *work unit* rank still play important roles in people's housing behavior.

2.3 Regional Disparities in Urban China's Housing Market

China is a nation characterized by vast size. The geographical variation of the housing market is evident but has surprisingly not attracted much attention from researchers. This is partly related to the issue of data availability at the national level. Li Si-Ming compared the housing consumption in Beijing and Guangzhou (2000a). It was found that in 2000, the housing market in Beijing was still dominated by the socialist system while the market reform had a more substantial impact on the housing market in Guangzhou, where the market-oriented reform measures were first experimented with (Li, 2000; Li & Li, 2006). Using the census data in 2000, Hanink et al., (2012) illustrated the significant spatial variation of determinants of housing prices and apartment rent in China (Hanink, Cromley & Ebenstein, 2012). Chen et al., (2011) analyzed the effects of urbanization and migration on housing price using provincial level cross-sectional and time-series data from 1995 to 2005. When comparing the results from coastal and inland provincial analyses, it was found that regional variations in the urbanization level had an impact on the price of sold commodity houses, with coastal provinces encountering greater pressure and challenges in dealing with the accommodation of migrants who were mainly from inland provinces. In contrast, inland provinces had relatively less pressure from migrants. Although the spatial variation of housing consumption is of emerging

interest, little work has been done to systematically compare housing situations across different tiers of Chinese cities and even fewer efforts have been made to investigate the regional disparities of housing.

In summary, existing studies of urban housing in China have documented the unequal access to homeownership as a critical contributing factor to the rise of social inequality in Chinese cities. Based on more detailed data, housing conditions or the quality of housing have also attracted considerable attention. Recent studies also pay particular attention to the geographical variation of housing in China. Drawing upon 2005 mini-census data, this study examines housing tenure status and housing conditions and the spatial variations of housing among different Chinese cities (ranked in tiers) and across different regions (east, central, west); it also explores the underlying factors of housing inequality in greater detail by differentiating different formats of home ownership.

3. RESEARCH QUESTIONS AND HYPOTHESES

3.1 Research Questions

- Question 1: What are the patterns of housing tenure status and housing conditions in Chinese cities? How and to what degree has market reform had an impact on housing tenure status (or homeownership) and housing conditions in urban China? To what extent do housing tenure status and housing conditions differ among different Chinese cities and regions?
- Question 2: What are the factors that account for housing inequalities in Chinese cities? What is the relative importance of socioeconomic, institutional, and geographic factors?

3.2 Working Hypotheses

- Hypotheses 1: Market reform has produced a variety of housing tenure forms and then results in a more diversified housing market in urban China.
- Hypotheses 2: Housing tenure choices and housing conditions differ among different groups of people and are associated with people's socioeconomic characteristics, lifecycle, political connections and hukou status.

- Hypotheses 3: Housing tenure status and conditions are affected by city tiers and regional geography. First-tier cities and eastern provinces are "one-step ahead" in the Chinese housing reform and therefore, the housing market in these cities and regions is more commercialized.

4. DATA AND METHODS

4.1 Data

This research is based on a 2005 Chinese mini-census that surveyed 1% of the population. The study includes all individuals who are between 18 and 54 years old from all of the 345 cities (or prefectures) in China; 54 is established as the cut-off age because in China, the official retirement age for men is 55 and 50 for women. After retirement, people seldom move to a new house, thus most of them do not change their housing tenure status. Students only accounted for a tiny portion in the sampled households (0.3%). Therefore, students were not excluded in the following analysis.

Compared to other similar studies, this is the largest and most comprehensive data set across the regions in which housing tenure status and conditions can be carefully compared and studied.

4.1.1 Unit of analysis and sample size

Household is used as the unit of analysis to study the differentiation of housing tenure status. There are 187,551 households in the sample. While the individual is used as the unit of analysis to explore the housing condition, there are 569,396 individuals in the sample.

4.2 Housing Tenure Status and Housing Conditions

The status of housing tenure, which includes home owners and renters, is a central issue in housing studies for at least two reasons. First, home ownership is an important indicator of wealth and socioeconomic status. For example, people who own commodity housing in China come from the wealthiest class in society and are better off in terms of quality of life. Second, home ownership—which is directly related to social stability and inequality—is a major policy target. A low home ownership rate is often linked to high tension between the rich and the poor and results in social unrest.

The housing conditions are measured according to the amount of usable area per capita (Wu, 2002) and a facility index (Liu, He & Wu, 2012). More specifically, the housing facilities index is a constructed indicator rated on a scale from 0 to 5, depending on the presence of a private bathroom, private kitchen, and shower/bath; as well as the availability of drinkable water and gas or electricity for cooking.

4.3 Definition of Different Tiers of Cities and Regions

The study area in this research comprises 345 cities (or prefectures) in China and three major regions (east, central and west) (see Figure 1). First, eastern provinces (12 provinces and municipalities in total) include Liaoning, Hebei, Tianjin, Beijing, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Guangxi and Hainan; central provinces (10 provinces and municipalities in total) are Heilongjiang, Jinlin, Inner Mongolia, Shanxi, Henan, Anhui, Hubei, Hunan, Jiangxi, Shanxi; western provinces include (8 provinces and municipalities in total) Gansu, Ningxia, Qinghai, Xinjiang, Sichuan, Chongqing, Yunnan, and Guizhou. A similar classification can be found in existing studies focusing on the spatial-temporal hierarchy of regional inequality of

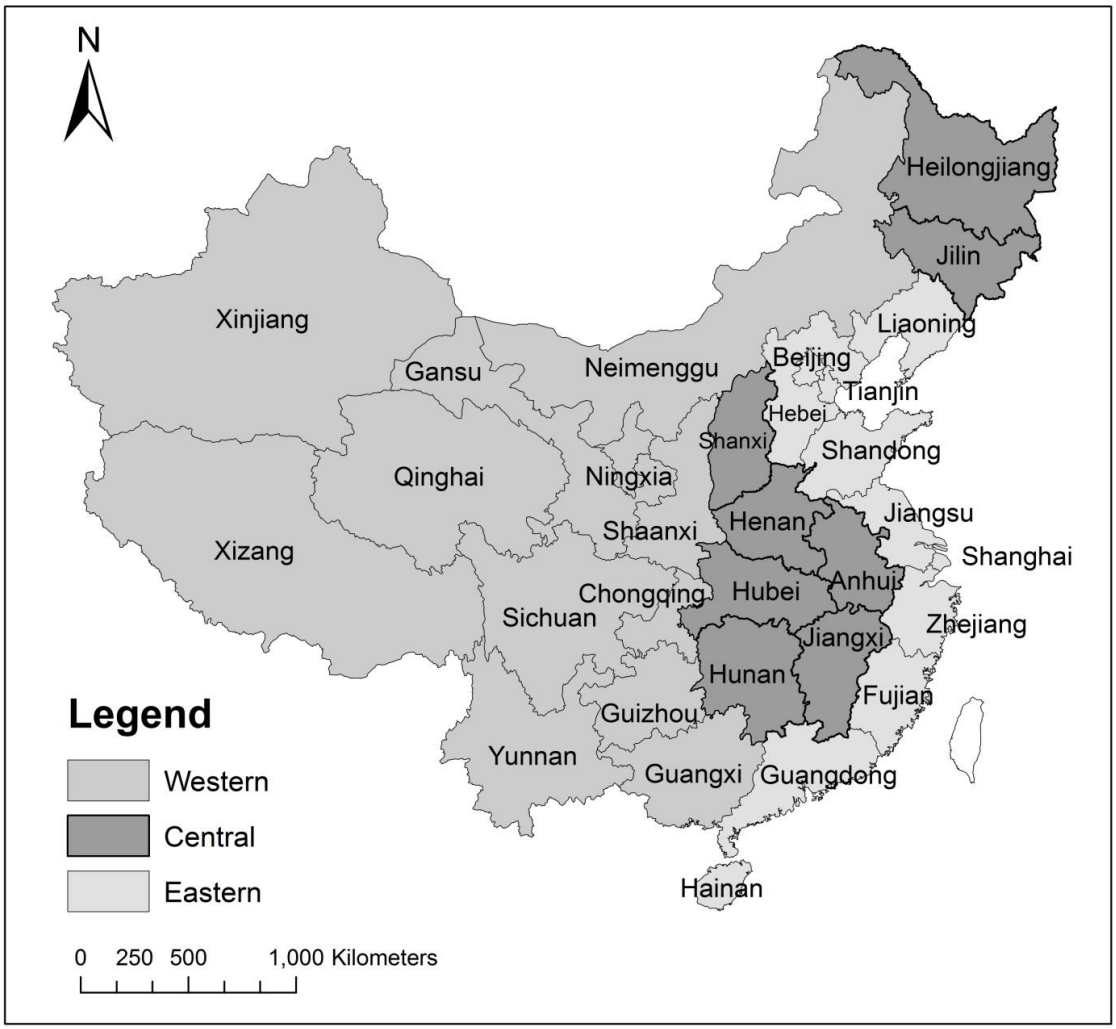

Figure 1 Regions and Provinces in China

China (Li & Wei, 2010). Second, the 345 cities are grouped into three tiers according to their economic importance: the first tier cities include Beijing, Shanghai, Guangzhou, and Shenzhen; the second-tier cities include Tianjin, Chongqing, Dalian, Qingdao, Xiamen, Foshan and all capital cities in provinces except for Guangzhou and Lasa (the capital city of Tibet). The third-tier cities include other cities at the prefecture level. The tier of a Chinese city is largely based on the China City Overall Competitiveness Index System, which includes 217 specific indexes covering the economy, society, environment and culture; for example, the economy development level reflected by GDP per capita. The four first-tier cities including Beijing, Shanghai, Guangzhou and Shenzhen are the largest and most developed city-level economies in China. Furthermore, in China, within a specific province, the capital city is mostly the economic center of the province and their economic development levels are also higher than the other cities at the prefecture level in the same province. Grouping Chinese cities into these three tiers is also in based on the reports titled, Competitiveness of Chinese Cities, released by the Chinese Academy of Social Sciences (CASS) since 2006 (Chinese Academy of Social Sciences 2006-2012).

4.4 Definition of Different Migrant and Hukou Status

Hukou is an institutional term unique to China. *Hukou* by definition is "household registration system"; it began in 1958 to minimize the movement of people from rural to urban areas (Chan, 2010; Fan, 2008). In general, there are two *hukou* statuses in China: urban or rural—people born in the city are registered as an urban *hukou*, while people born in rural areas are registered as a rural *hukou*. Moreover, people's migrant status is also defined by *hukou*—people without a local *hukou* are defined as migrants. *Hukou*

relates to almost every aspect of people's lifetime welfare in China, such as access to subsidized housing in a city, children's education, healthcare, etc. in the local area.

Once we combine the aforementioned statuses regarding *hukou*, including rural or urban, local or not-local, there are four types of *hukou* (migrant) status: urban local resident, rural local resident, urban migrant and rural migrant. This study focuses on urban residents, who are living in the cities on the date of enumeration for at least half a year. Based on residential registration status (*hukou*) and location of *hukou*—local *hukou* or not, I divide urban residents into three categories:

- Urban local residents— people or household heads who had local urban *hukou* and reside in a city (or prefecture) on the date of enumeration (November 1, 2005)
- Urban migrants— people or household heads who had urban *hukou* and reside in a city (or prefecture) of enumeration on the date of enumeration (November 1, 2005). But their *hukou* was registered at their hometown, which is different than the city they resided in
- Rural migrants— people or household heads who had rural *hukou* and reside in a city (or prefecture) of enumeration on the date of enumeration (November 1, 2005). But their *hukou* was registered at their hometown, which is different than the city they resided in

The reason for the exclusion of rural local residents is that this group of people only occupies an extremely tiny share of urban residents in Chinese cities. In fact, they live in the original rural or suburban areas in Chinese cities. Along with the urban expansion, previous villages are converted into urban districts, while this group of people

still maintains their rural *hukou* status and most of them live in self-built housing.

4.5 Analytical Methods

4.5.1 Descriptive analysis

In this research, descriptive analysis will be employed to compare the housing situation in different tiers of Chinese cities and different regions. The descriptive analysis and cross tabulation are conducted to compare housing tenure status, homeownership rates and housing conditions in different socioeconomic groups (e.g., age, *work-unit*, educational attainments, etc.) based on the mini census data in 2005.

4.5.2 Spatial variation of housing tenure status

The spatial unevenness or contextual consideration is found as an important component in housing studies (Li, 2000). Huang and Clark (2002) applied a multilevel modeling regression method and found that the relationship between households and other agents in housing systems varies across cities and thus tenure status demonstrates intercity differences. Chen et al., (2011) also found that housing price dynamics on coastal provinces vary greatly from those in inland provinces (Chen et al., 2011a). In this study, the spatial variation of housing tenure status or home ownership is analyzed with the aid of mapping software, i.e., ArcGIS 10.0.

4.5.3 Regression analysis of determinants of housing tenure and housing condition

In the second stage of this research, the study focuses on the explanation of housing tenure status and housing conditions. Multinomial logistic regression and OLS

regression were employed to estimate the impact of a set of socioeconomic, demographic and institutional factors that affect household's housing tenure status (homeownership) and individual's housing conditions.

In terms of housing tenure, different from the previous studies, the dependent variable is not a dichotomous variable (rent or own). Following Liu et al., (2012), the dependent variable will include six types of housing tenure (HT): own self-built houses, own commercial housing, own affordable housing, own *work-unit* housing, public rental housing, and rented public housing (reference category). In addition, the housing conditions will be measured by the per capita usable area (PA) and housing facilities index (HF) scaled from 0 to 5.

Given the multinomial nature of the housing tenure variable and the score of housing facility index (0-5), multinomial logistic regression and OLS regression were employed to explore the determinants of housing tenure and the well-being of housing facilities. In particular, the interpretation of relative risk ratios resulting from multinomial logistic model is similar to odds ratios in a logistic regression. In addition, due to the continuous nature of the variables of per capita usable area and per capita rooms, OLS regression is more desirable.

The explanatory variables of homeownership and housing conditions were selected following the literature (e.g., Li, 2000, see equation 1). The first set of variables is mainly focused on demographic and socioeconomic status of the head of household including marital status, age, gender, educational attainment, working hours and income. The second set of variables pays attention to some unique institutional factors that affect housing consumption in China, which comprises *hukou, political connections* and *work-*

unit types. The third set of factors places an emphasis on the geographical and contextual factors. It includes the tiers of cities and regions (eastern, central and western regions).

Expressed formally, the model is as follows:

HT, PR, HF= Demographic + Socioeconomic+ Institutional + Geographical (eq. 1)

HT= the multiple housing tenure status (Multinomial)

PR= the per capita usable area (OLS)

HF= the housing facilities index (OLS)

4.5.3.1 Demographics and socioeconomics

Age = age group, coded as 18-24, 25-34, 35-44 (ref.) and 45-54

Marital= marital status of respondent (1=married, 0=single)

Education = indicators to control for educational attainment (<middle school = Ref).

Household size = number of residents

Income = monthly household income

Work hours= work hours in the last week before the survey

4.5.3.2 Institutional

Hukou =*Hukou*_Migrant status (urban local *hukou* (ref.), urban migrant *hukou*, rural migrant *hukou*)

Work-unit =Government, SOE (State-owned enterprise), POE (private or collective owned enterprises, other enterprises)

Job rank = Party leader or stated owned enterprises (SOEs) managers

4.5.3.3 Geography

Tier Cities = dummy variables to control for first, second and third tier (ref.) cities

Region = dummy variables to control for east, central and west provinces (ref.)

5. RESULTS

5.1 Descriptive Analysis of Housing Tenure Status and Housing Conditions

As shown in Table 1, 68.5 % of urban households own their homes. Among home owners, 22.1 % buy commodity housing, followed closely by *work-unit* housing, which accounts for 21.2 %. Self-built housing falls at 17.1 %. These three groups comprise the majority of home owners in China, with only 8.1 % of total homeownership categorized as subsidized. By comparison, within the rental category, the proportion of those in commodity housing is nearly twice that of those living in public housing.

As Table 1 highlights, the percentage of home owners and renters varied greatly across different age groups. First, housing tenure choices differ greatly in different age groups. The youngest generation is struggling in terms of home ownership because it has hardly benefited from the socialist housing welfare system. Young people tend to live in private rental houses. This is particularly the case for those who are under 25 years of age, and whose proportion of private rental housing is as high as 68.5 %. The percentage of purchased commodity housing in the age group of 25 to 34 is 26 %, which is the highest among all age groups. Moreover, the age group of 45 to 54 has the highest proportion of self-built housing. The proportion of purchased *work-unit* housing in the group out performs other age groups. This finding suggests that both age and cohort effects contribute to different housing tenure choices. In general, when age increases, the homeownership rate tended to rise because of household formation. Moreover and

Table 1 Housing Tenure by Household Head's Demographic, Socioeconomic, Institutional Status

	Own (68.5%)				Rent (31.5%)		Obs.
	Own self-built housing	Own commodity housing	Own affordable housing	Own *work-unit* housing	Public rental housing	Private rental housing	
Total	17.1	22.1	8.1	21.2	11.2	20.3	187,551
Demographic							
Age							
18-24	4.3	10.6	2.0	3.5	11.0	68.5	8,140
25-34	11.0	26.0	6.9	11.8	10.4	33.8	48,952
35-44	17.8	23.4	9.3	22.4	10.4	16.7	72,775
45-54	23.0	18.8	8.5	30.0	12.9	6.7	57,684
Marital Status							
Single	4.6	16.1	2.8	7.6	15.3	53.5	12,870
Currently married	18.1	22.7	8.5	21.8	10.5	18.3	165,626
Formerly married	16.2	19.6	7.6	28.7	17.3	10.5	9,055
SOE							
Education							
No school or only elementary school	30.5	9.8	3.9	9.6	9.5	36.8	17,102
Middle school	18.4	19.4	7.4	20.7	12.1	22.0	126,586
Some college to graduated school	8.1	34.8	11.8	27.1	9.2	9.0	43,863
Institutional *Hukou* and Migrant							
Urban local	21.3	25.2	10.2	27.2	11.6	4.6	139,450
Urban migrant	4.1	30.1	4.3	10.1	11.1	40.5	15,097
Rural migrant	5.0	5.6	1.0	1.1	9.6	77.8	33,004

Table 1 Continued

	Own (68.5%)				Rent (31.5%)		Obs.
	Own self-built housing	Own commodity housing	Own affordable housing	Own *work-unit* housing	Public rental housing	Private rental housing	
Job rank							
Party leader and SOE manager	13.9	35.6	9.5	20.2	6.7	14.0	9,434
Nor party leader and SOE manager	17.2	21.4	8.0	21.2	11.4	20.7	178,117
Work-unit							
Government	16.6	28.9	13.2	27.4	9.9	4.0	32,919
SOE	7.5	23.0	12.0	37.9	14.2	5.5	37,031
POE	20.2	20.0	5.5	14.2	10.6	29.6	117,601

Obs.=187,551

Note:

1.The data universe is family household.

2.Urban family household refers to the family households living in the city of which the census survey was taken on the date of enumeration. It includes urban local households, urban migrant households and rural migrant households. Rural local households and collective households are excluded.

importantly, the percentage of owning commodity housing in the age group of 25-34 was much higher than the groups of 35-44 and 45-44. It is inferable that people born in the late 1970s who can hardly benefit from the pre-reform socialist housing system have to attain homeownership by purchasing a commodity houses or apartments.

Second, education attainment matters. People with elementary school or below were more likely to own or inherit self-built housing or rent private housing. In particular, the proportion of self-built housing is the highest in the three groups. In contrast, college graduates are more likely to purchase private houses or original *work-unit* houses. The number of people who bought commodity houses has accounted for 32.5 %. This group also had the highest proportion of owning *work-unit* houses.

Third, Table 1 reveals that, in comparison with rural migrants, local residents were more likely to be homeowners. Nearly 24% of local residents owned private housing, in contrast with 5% among rural migrants. However, 27.9 % of urban migrants owned private houses. This reveals that, for those migrants with urban *hukou*, who are mostly well educated, purchasing commodity housing is a primary road to home ownership. Furthermore, local residents are more likely to benefit from the socialist welfare housing system. About 25.8 % of local residents get access to homeownership by owning a *work-unit* house. This number is nearly three times more than that among urban migrants. Among rural migrants, nearly 70 % of them live in private rental housing, whereas the proportion of *work-unit* housing was strikingly low (1%).

Fourth, geographical differences of housing tenure statuses are also evident. Table 2 further illustrates that in the eastern region, the proportion of purchasing commodity housing was the highest (24%). Also, the ratio of rental private housing in eastern China

Table 2 Housing Tenure by Household Head's Regional Factors

	Own (68.5%)				Rent(31.5%)		
	Own Self-built housing	Own commodity housing	Own affordable housing	Own *work-unit* housing	Public rental housing	Private rental housing	**Obs.**
Region							
East	14.3	24.2	6.7	17.1	12.5	27.3	104,600
Central	22.2	20.0	11.7	27.0	8.1	10.9	49,194
West	18.1	18.9	13.6	25.5	11.7	12.3	33,757
Tier of city							
Tier 1	6.6	24.2	2.6	15.1	12.1	39.5	34,732
Tier 2	9.2	23.2	7.6	25.2	17.2	17.6	42,553
Tier 3	23.4	21.1	10.1	21.5	8.6	15.4	110,266

Obs.=187,551

Note:

1. The data universe is family household.

2. Urban family household refers to the family households living in the city of which the census survey was taken on the date of enumeration. It includes urban local households, urban migrant households and rural migrant households. Rural local households and collective households are excluded.

is even three times more than that in central and western parts of the nation. It shows that with a dramatic increase of migrant workers, there is a higher demand for rental housing in the eastern region. Moreover, in central and western regions, the proportions of self-built housing and *work-unit* housing were higher than the eastern part of the nation. This is due to the fact that there are more stated owned enterprises and agricultural towns in inland areas, thus *work-unit* housing and self-built housing are more prevalent.

Figure 2 provides more details about the spatial variation of homeownership rates in China. It shows that coastal provinces and municipalities in southeast China including Guangdong, Fujian, Zhejiang, Jiangsu, Shanghai and Beijing tend to have a lower homeownership rate.

Figure 3 details regional inequality in housing prices in China. Housing prices in eastern provinces and large cities such as Beijing and Shanghai is much higher than in western and central regions. Combing these two maps reflects that in those affluent cities where housing is more expensive and migrants are mostly concentrated, homeownership is much lower.

Fifth, housing tenure statuses tend to differentiate among different tiers of Chinese cities. The home ownership rate in the first tier cities was 48.5 %, whereas the numbers in the second and third tier cities were 65.3 % and 76.0 %. Notably, the proportion of purchased *work-unit* housing in the first tier of Chinese cities, which includes Beijing, Shanghai, Shenzhen and Guangzhou was much lower than the numbers for second and third tier cities. In contrast, the rent private housing occupied 39.5% of the housing market in the first tier cities but their counterparts in second and third tier cities were only 17.6 % and 15.4 %, respectively. Therefore, market reform has a stronger

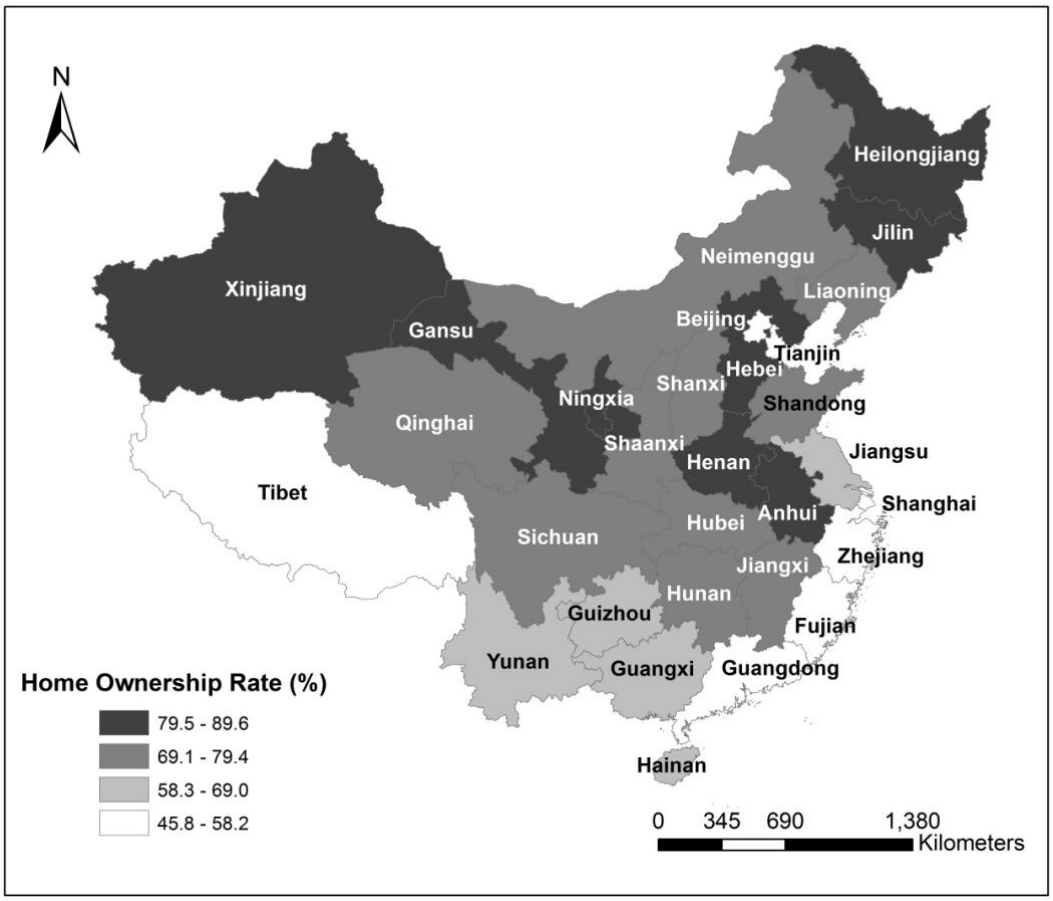

Figure 2 Home Ownership Rate by Province in China, 2005

Data source: 2005 Chinese mini census 1% population survey, compiled by author

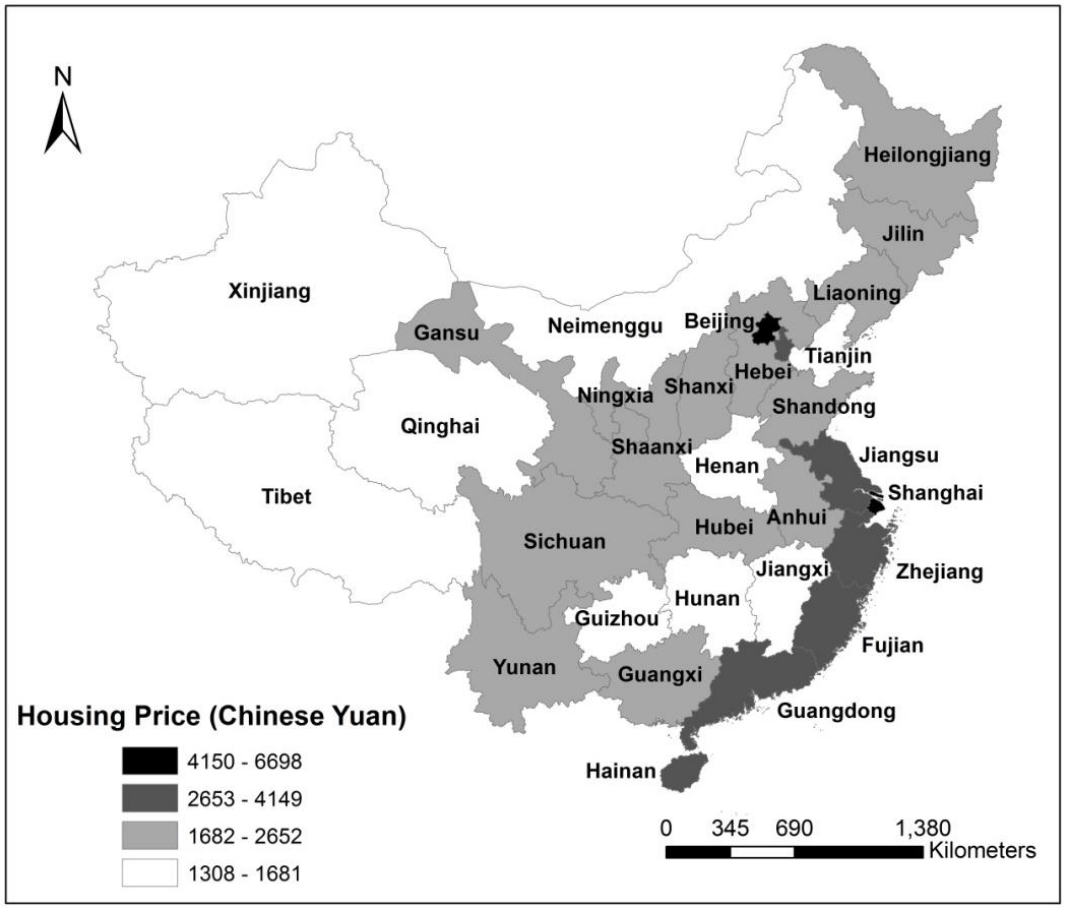

Figure 3 Housing Price by Province in China, 2005

Data source: National Bureau of Statistics of China, 2006

impact on the transformation of housing market in first tier Chinese cities.

5.2 Descriptive Analysis of Housing Conditions

In addition to housing tenure status, there are significant inequalities of housing conditions among different socioeconomic groups in China (Table 3). First, young people consume less housing in comparison with the middle-age group. In terms of housing facilities, elderly people have better housing facilities. Second, marital status matters in people's housing consumption. Married people are more likely to live in larger houses and own better housing facilities. Third, there is also a significant correlation between household types (collective household vis-à-vis family household). Those who registered a collective household (most of them are migrant workers in large-size manufacturing enterprises) had poorer housing conditions regardless of per capita floor area or housing facilities. This result also echoes the aforementioned analysis of migrant workers' housing tenure status.

Fourth, people with the highest education attainment consumed the largest and the best equipped housing. In contrast, those with junior middle school education or below had poorer housing conditions. Again, better educational attainment is one of most important determinants of housing conditions.

Fifth, Table 3 shows a strong correlation between *hukou* status and housing conditions. Local residents and urban migrants are in a better status in terms of living space and housing facilities. Rural migrants only consumed half of the housing area of local residents. However, urban migrants' housing conditions matched the level of local residents. In other words, the *hukou* system has reinforced the housing inequality between migrants and residents although the *hukou* system alone does not account for housing

Table 3 Housing Conditions by Household Head's Demographic, Socioeconomic, Institutional Status

	Floor Area Per Capita(sqmt)		Housing Facility Index		Obs.
	M	SD	M	SD	
Demographic					
Age					
18-24	19.1	18.9	3.320	1.533	104,653
25-34	22.9	19.1	3.685	1.458	170,123
35-44	24.9	19.9	3.833	1.406	173,216
45-54	29.1	23.2	3.984	1.331	121,404
Marital Status					
Single	16.2	16.8	3.355	1.506	156,465
Currently married	25.1	21.3	4.143	1.255	407,221
Formerly married	33.5	29.5	4.144	1.226	14,279
Household Type					
Family household	25.8	20.5	4.174	1.247	459,900
Collective household	11.1	16.0	2.889	1.401	109,496
SOE					
Education					
No school or only elementary school	21.0	20.9	2.955	1.495	64,520
Middle school	23.0	20.0	3.674	1.433	378,800
Some college to graduated school	29.0	21.0	4.279	1.237	126,076
Institutional					
***Hukou* and Migrant Status**					
Urban local	27.3	20.7	4.001	1.322	392,383
Urban migrant	25.1	21.4	4.036	1.360	49,779
Rural migrant	13.9	15.9	2.764	1.436	126,188
Missing data	24.0	21.8	2.395	1.392	1,046
Job rank					
Party leader and SOE manager	38.7	29.9	4.808	0.681	19,239
Nor party leader and SOE manager	22.2	20.1	3.896	1.382	550,157
Work-unit					
Government	29.1	21.7	4.542	1.097	71,952
SOE	25.4	17.9	4.515	0.915	89,321
POE	21.0	20.8	3.689	1.429	408,123
Obs.=569,396					

Note:

1. The data universe is population.
2. Urban residents include urban local residents, urban migrants and rural migrants. Local residents in rural areas are excluded.

inequality in Chinese cities.

Sixth, we also calculate the correlation coefficients between housing conditions and income. The resulting coefficients regarding per capita floor area and housing facility index are 0.14 and 0.13, respectively, and both are statistically significant. In other words, income is a strong predictor of housing conditions. Higher monthly income indicates better housing conditions.

Seventh, housing conditions are closely associated with political connections and working units. Higher-rank officials in the party and high-level managers enjoyed much better housing conditions. In addition, employees in private enterprises endured the poorest housing conditions if compared with employees in stated owned enterprises and government. These results clearly point to the fact that in China, the attributes of the employers are playing a key role in forming housing conditions; the rank of occupations matters as well. This shows that institutional factors such as *hukou* and occupation, and market factors such as educational attainment help determine housing.

Table 4 reports the spatial variation of housing conditions in China. First, according to Table 4, the variations of housing conditions among different regions are less significant than the differences of housing tenure status, although people in eastern housing facilities. These results partly reflect that since housing prices in the eastern regions and largest Chinese cities have risen more quickly in the early 2000s, people in these cities or regions are more likely to purchase smaller houses and apartments. However, they are more likely to enjoy better housing facilities.

Table 4 Housing Conditions by Household Head's Regional Factors

	Floor Area Per Capita (sqmt)		Housing Facility Index		Obs.
Region	**M**	**SD**	**M**	**SD**	
East	23.110	21.264	3.902	1.408	336,243
Central	25.355	18.948	3.401	1.438	136,435
West	25.959	19.918	3.577	1.498	96,718
Tier of city					
Tier 1	20.075	18.480	3.970	1.369	112,626
Tier 2	22.977	19.000	3.948	1.375	132,642
Tier 3	26.015	21.565	3.552	1.478	324,128

Obs.=569,396

Note:
1.The data universe is population.
2. Urban residents include urban local residents, urban migrants and rural migrants. Local residents in rural areas are excluded.

5.3 Multivariate Model on Housing Tenure Status and Conditions

In this study, two sets of multivariate models are employed to further explore the housing differentiation in Chinese cities. First, a multinomial logistic regression is used to regress on housing tenure. In other words, the dependent variable is housing tenure status, while the independent variables include head of household characteristics and household characteristics (Table 5 and Table 6).

Second, ordinary least squares (OLS) regressions are used to explore the linkage between individual socioeconomic status and housing conditions including per capita floor space (m^2) and facility index.

5.3.1 Multinomial logistic regression on housing tenure

Table 7 reports the results from the multinomial logistic regression. The pseudo *R* square is 0.225, and the *F* statistic suggests that the model is significant. The coefficients also reflect and address the relative importance of characteristics for housing tenure in a multivariate setting using public rental as a reference group.

First, life cycle has a strong impact on housing tenure status in Chinese cities, while these effects are also associated with the process of market transition. Table 7 shows that older people (45-54) were more likely to own self-built housing and own *work-unit* housing, as revealed in the descriptive analysis. As expected, older people were also less likely to purchase commodity housing, whereas the majority of consumers of commodity housing are those between 25 and 34. For private rental housing, the results confirm that young people were also more likely to rent private houses if compared with people between 35 and 44. Interestingly, the likelihood of purchasing affordable housing followed an inverted 'U' shape. In comparison with the reference group (35-44),

Table 5 Descriptive Statistics of Independent Variables in Multinomial Model

	M	SD	%	N
Head of household characteristics				
Demographic				
Age(years)	39.4	8.528		187,551
Marital Status				
Single			6.9	12,870
Currently married			88.3	165,626
Formerly married			4.8	9,055
Household size	2.8	1.106		
Education				
No school or only elementary school			9.1	17,102
Middle school			67.5	126,586
Some college to graduated school			23.4	43,863
Household income (RMB yuan/per month)	1,585.8	1884.369		
Institutional				
Hukou and Migrant				
Urban local			74.4	139,455
Urban migrant			8.1	15,096
Rural migrant			17.6	33,000
Party connection				
Party or administrative			5.1	9,434
Ordinary professional/worker/staff			94.9	178,117
Work-unit				
Government			17.6	32,919
SOE			19.7	37,031
POE			62.7	117,601
Region				
East			55.8	104,600
Central			26.2	49,194
West			18.0	33,757
Tier of city				
Tier 1			18.5	34,732
Tier 2			22.7	42,553
Tier 3			58.8	110,266
Obs.=187,551				

Note: 1.The data universe is family household.

2. Urban family households include urban local households, urban migrant households and rural migrant households. Rural local households and collective households are excluded.

Table 6 Descriptive Statistics of Independent Variables in OLS Model

	M	SD	%	N
Individual characteristics				
Demographic				
Age(years)	33.8	10.232		569,396
Marital Status				
Single			27.5	156,465
Currently married			71.5	407,221
Formerly married			1.0	5,710
Education				
No school or only elementary school			10.0	57,158
Middle school			67.0	381,228
Some college to graduated school			23.0	131,010
Personal income (RMB yuan /per month)	970.0	1086.234		
Institutional				
Hukou and Migrant				
Urban local			59.1	336,480
Urban migrant			9.8	55,633
Rural migrant			31.1	177,283
Party Connection				
Party or administrative			3.4	19,239
Ordinary professional/worker/staff			96.6	550,157
Work-unit				
Government			12.6	71,952
SOE			15.7	89,321
POE			71.7	408,123
Region				
East			19.8	112,626
Central			23.3	132,642
West			56.9	324,128
Tier of city				
Tier 1			34.7	197,435
Tier 2			29.9	170,243
Tier 3			35.4	201,718

Obs.=569,396

Note: 1. Excludes rural local populations, who have local agricultural hukou.

2. Includes individuals living in both family households and collective households.

Table 7 Multinomial Logistic Regression on Housing Tenure

	Own														
	Own Self-built housing			Own commodity housing			Own commodity housing			Own *work-unit* housing			Rent Private Rental Housing		
Independent Variables	**Coef.**	**Sig.**	**Std. Err.**	**Coef.**	**Sig.**	**Std. Err.**	**Coef.**	**Sig.**	**Std. Err.**	**Coef.**	**Sig**	**Std. Err.**	**Coef.**	**Sig.**	**Std. Err.**
Cons.	-0.575	***	0.072	-0.867	***	0.062	-1.194	***	0.089	-0.189	**	0.066	-0.626	***	0.064
Demographics															
Age (ref. age 35-44)															
18-24	-0.364	***	0.076	-0.116	*	0.058	-0.540	***	0.097	-1.022	***	0.078	0.851	***	0.052
25-34	-0.265	***	0.026	0.168	***	0.023	-0.193	***	0.029	-0.518	***	0.025	0.404	***	0.026
45-54	0.137	***	0.023	-0.318	***	0.022	-0.099	***	0.026	0.160	***	0.021	-0.675	***	0.029
Marriage (ref. Single)															
Currently married	0.437	***	0.058	0.496	***	0.041	0.710	***	0.068	0.617	***	0.048	0.193	***	0.041
Formerly married	0.214	**	0.068	0.363	***	0.053	0.414	***	0.081	0.484	***	0.057	-0.025		0.061
Household size	0.570	***	0.010	0.269	***	0.010	0.234	***	0.012	0.108	***	0.010	-0.122	***	0.011
Socioeconomics															
Education (ref. Less than middle school)															
Middle school	-0.697	***	0.034	0.174	***	0.038	0.165	**	0.050	0.247	***	0.039	-0.330	***	0.035
College	-1.083	***	0.045	0.744	***	0.045	0.6256	***	0.057	0.633	***	0.046	-0.317	***	0.048
Household income	-0.078	***	0.010	0.270	***	0.008	0.214	***	0.010	0.197	***	0.008	0.144	***	0.009
Work hours in last week	0.009	***	0.000	-0.001	**	0.000	-0.005	***	0.001	-0.009	***	0.000	0.013	***	0.001

Table 7
Continued

	Own												Rent		
	Own Self-built housing			Own commodity housing			Own commodity housing			Own *work-unit* housing			Private Rental Housing		
	Coef.	Sig.	Std. Err.	Coef.	Sig.	Std. Err.	Coef.	Sig.	Std. Err.	Coef.	Sig	Std. Err.	Coef.	Sig.	Std. Err.
Institutional															
Job rank (ref. Not Party leader or SOE manager)															
Party leader or SOE manager	0.435	***	0.053	0.467	***	0.046	0.349	***	0.056	0.131	**	0.049	-0.010		0.057
Work-unit type (ref. Private and other enterprises)															
Government	-0.152	***	0.030	-0.311	***	0.028	0.186	***	0.034	0.170	***	0.028	-1.034	***	0.041
State owned enterprise (SOE)	-1.317	***	0.028	-0.514	***	0.023	0.180	***	0.028	0.469	***	0.023	-1.405	***	0.032
Hukou status (ref. Urban local residents)															
Urban migrants	-1.015	***	0.051	0.158	***	0.032	-0.371	***	0.050	-0.682	***	0.038	1.900	***	0.034
Rural migrants	-1.548	***	0.037	-1.261	***	0.034	-1.548	***	0.062	-2.361	***	0.058	2.275	***	0.028
Geography															
City Tier (ref. Tier3)															
Tier1	-1.117	***	0.033	-0.451	***	0.027	-1.176	***	0.045	-0.427	***	0.029	0.011		0.030
Tier2	-1.362	***	0.025	-0.615	***	0.021	-0.825	***	0.027	-0.474	***	0.021	-0.788	***	0.026
Region (ref. West)															
East	0.084	**	0.027	0.213	***	0.025	-0.832	***	0.030	-0.368	***	0.025	0.085	**	0.031
Central	0.541	***	0.029	0.426	***	0.028	0.175	***	0.031	0.372	***	0.027	0.426	***	0.035

Note: Pseudo *R2*: 0.225; Number of observations: 187,828
1. * ref Rent public housing
2. Number of observations: 187,828 family households, excludes rural local households, who have local agricultural hukou. Collective households are also excluded.

purchasing affordable housing is less prevalent for other age groups. However, this effect needs further investigation in association with other factors. Moreover, consistent with the research in the context of Western countries, household formation or being married is positively associated with all forms of homeownership and private housing rental, compared to public housing rental. This finding suggests that as market reform deepens, events in a life cycle will play an important part in housing consumption behaviors, although scholars who analyzed data up to 1994 find that marital status is not a triggering factor of changing housing tenure in a transitional economy (Huang & Clark, 2002a).

Second, housing tenure status is greatly influenced by education attainment. The well educated, especially college graduates, had a higher likelihood of home ownership except for self-built housing. As mentioned above, self-built housing is a unique format of homeownership for those original rural residents in China. Therefore, the result still confirms the positive relationship between education attainment and home ownership. Notably, the model shows that people with middle school education attainment are also less advantaged if compared with college graduates, except for rental commodity housing. In other words, people with primary or lower education attainment were the most disadvantaged group under both planned and market systems.

Third, in addition to educational attainment, other socioeconomic factors also exert influences on housing tenure status. Long working hours in the last reported week have a negative impact on homeownership except for self-built housing. The possible explanation is that in China, those who work for a longer time per week are more likely to be employees with lower hourly pay such as employees in the manufacturing sector. Therefore, longer working hours may not result in higher income in Chinese cities. Such

inference is confirmed by the effect of income. High income households had a much higher likelihood of purchasing commodity housing and *work-unit* housing, while they are less likely to live in self-built housing and public rental housing. This suggests that under market transition, economic well-being has become increasingly important in determining housing tenure status in China. Furthermore, there was a significant correlation between household size and homeownership, as it is in Western countries.

Fourth and more importantly, a set of institutional factors that are unique to the Chinese housing system were proven to be influential in people's housing tenure status. Being a Party leader or holding a high-level manager rank in stated-own enterprises tended to result in a higher likelihood of obtaining homeownership. Employees in state owned enterprises and government were less likely to own self-built houses and rent private houses, but they were more likely to own affordable housing and *work-unit* houses. In contrast, workers in private enterprises had higher propensities to rent private houses, and they were also more likely to buy commodity housing. This indicates that this group has hardly benefited from the original socialist welfare housing system.

Compared to local residents, it is very challenging for rural migrants to achieve homeownership, and they were generally more likely to rent private housing. The model also succeeded in distinguishing urban from rural migrants. Rural migrants, namely migrants without urban *hukou*, were less likely to purchase commodity houses. However, in comparison with urban local residents, urban migrants, i.e., those migrants who had urban *hukou*, were more likely to get access to home ownership through purchasing commodity housing. This finding suggests that the *hukou* system remains an important determinant of housing tenure in Chinese cities.

Fifth, there were salient geographical variations in housing tenure across different tiers of cities and in different regions. In comparison to the third tier cities, people living in first tier and second tier cities are facing more difficulties in achieving homeownership regardless of different homeownership formats. This is partly due to the fact that housing prices in the four major cities of Beijing, Guangzhou, Shenzhen and Shanghai (first tier cities), as well as in capital cities in different provinces (second tier cities), are much higher than small cities and towns (third tier cities). Notably, in comparison with third-tier cities, people living in the largest cities were also more likely to rent private houses. Moreover, such significant differences were also found among different regions. People living in eastern and central regions tend to have a higher probability of purchasing commodity houses and rent private housing. However, people living in the eastern region were less likely to buy affordable and *work-unit* houses, and those living in central and western regions were more likely to benefit from the socialist housing system. These findings suggest that the process of housing market reform in China is spatially uneven. As argued by Huang (2004) and Chen, Guo and Wu (2011), more efforts should be made to provide a more nuanced understanding of the spatial variations of housing market reform in China.

5.3.2 OLS regression of housing conditions

Table 8 summarizes the OLS regression results on floor space per capita and on the facility index. Both models are statistically significant and provide the following insights regarding the factors that affect housing conditions.

First, older people tend to consume larger and higher quality housing, which implies that the legacy of socialist housing allocation system still persists in the post-

Table 8 OLS Regression Against Housing Conditions at the Individual Level

Dependent variables	**Floor area per capita**			**Housing facility index**		
Independent variables	**Coef.**	**Sig.**	**Std. Err.**	**Coef.**	**Sig.**	**Std. Err.**
Cons.	27.167	***	0.148	3.273	***	0.010
Demographics						
Age (ref. 35-44)						
18-24	-3.268	***	0.112	-0.321	***	0.007
25-34	-1.081	***	0.069	-0.069	***	0.004
45-54	3.750	***	0.074	0.043	***	0.005
Gender (ref. Female)						
Male	-0.891	***	0.054	-0.179	***	0.003
Marriage (ref. Single)						
Currently married	-0.870	***	0.095	0.106	***	0.006
Formerly married	6.125	***	0.189	-0.032	**	0.012
Socioeconomics						
Personal income (in RMB1,000 yuan)	1.752	***	0.028	0.130	***	0.002
Middle school	0.291	**	0.087	0.438	***	0.006
College	2.987	***	0.112	0.680	***	0.007
Work hours in the last week	-0.925	***	0.001	-0.446	***	0.000
Institutional						
Party or senior managers	4.733	***	0.160	0.208	***	0.010
Government	2.415	***	0.090	0.137	***	0.006
SOE	-2.134	***	0.080	0.279	***	0.005
Urban migrants	-1.380	***	0.096	-0.227	***	0.006
Rural migrants	-10.436	***	0.077	-1.125	***	0.005
Geography						
City Tier (ref. Tier3)						
Tier1	-5.153	***	0.078	0.288	***	0.005
Tier2	-3.152	***	0.065	0.303	***	0.004
Region (ref. West)						
East	0.605	***	0.076	0.465	***	0.005
Central	-1.032	***	0.082	-0.230	***	0.005
Obs.	569,396			569,396		
R2	0.111			0.246		

Note:

1. Excludes rural local population, who has local agricultural hukou.
2. Includes individuals living in both family households and collective households.

reform era. Second, in general, females fare better in terms of housing conditions. One possible reason is that most migrant workers in cities tend to be male. Third, the effect of marriage showed as either positive or negative; married people tend to have smaller living space, although they enjoy better housing facilities. Fourth, income and educational level have a strong positive impact on housing conditions; compared to people with a middle school education, those with college and higher education occupied dwellings with more space and better facilities. In contrast, those with only elementary school education consumed smaller and poorer housing. These results are consistent with previous findings and reflect the emerging market dynamics in housing consumption. Fifth, occupations and *work-unit* affiliations played a key role in determining housing conditions. High-ranking staff in the Party and state-owned enterprises (SOE), tend to occupy more space and have better housing facilities. Interestingly, people working in SOEs occupied smaller living spaces when compared with government employees, although they were more likely to have better housing facilities, a fact that maybe attributed to *work-unit* housing having been built in the prereform period. In the 2000s, both housing prices and the average floor space of houses and apartments in China have increased. Sixth, migrants, especially rural migrants, consume smaller and less well equipped housing than local residents. *Hukou* status as an institution that originated in the socialist period continues to influence housing consumption in the reform era. Seventh, geography also matters. In comparison with third tier Chinese cities, people living in Beijing, Shanghai, Shenzhen and Guangzhou tend to live in smaller apartments. Not surprisingly, housing facilities in the first tier cities were better. Moreover, housing conditions in the eastern region were much better than those in western regions. However,

people in the central area tended to live in smaller houses and the quality of housing facilities was poorer than eastern and western regions. These results suggest the geographical differences of housing conditions between coastal and inland areas are consistent with the spatial pattern of economic disparities.

6. DISCUSSIONS AND CONCLUSIONS

Housing reform in urban China is undoubtedly an important part of the Chinese economic transition. Reform has successfully introduced market mechanisms into a socialist housing system. It has not only changed the nature of the housing system, but has also exerted a significant influence on people's housing behavior and brought about a boom in the housing market in Chinese cities. It has been commonly recognized that emerging market forces and the legacies of the socialist housing system have created a highly unique context in which both housing tenure status and housing conditions have been shaped and reshaped. On the one hand, privatization and liberalization have given rise to diverse formats of housing tenure status in the Chinese housing market (Huang & Clark, 2002). Compared to the pre-reform era when people had no choice but to rely on subsidized rental housing—in the post-reform era—people are now offered more options such as purchasing commodity housing in Chinese cities. On the other hand, the elite class under state socialism continues to benefit from the commercialization of the housing system (Huang & Yi, 2011). Yet younger generations are facing more challenges in their pathways to home ownership. These challenges can partly be manifested by the emerging phenomenon of "ant tribes" in many large Chinese cities (Li, 2010). These housing inequalities, however, have not been fully elaborated on in the previous literature. In general, the focus of researchers thus far has tended to analyze aggregate binary choices (e.g., own or rent), has placed less emphasis on housing conditions, and has paid

little attention to the spatial dimension of housing inequality.

Evidence derived from the 2005 mini census clearly demonstrates the two sides of such a story: a more vibrant housing market accompanied by intensifying housing inequalities. The results demonstrate that commodity housing and rental private housing have become two major housing tenure statuses, and different housing choices are closely associated with such institutional variables as *hukou* status. Specifically, the unevenness of housing defined by institutional and socioeconomic factors highlights the heterogeneity of the Chinese housing market (Yu, 2006). Although these findings have been mentioned in many case studies in individual Chinese cities (e.g., Liu, He & Wu, 2012), results of this study mainly suggest such a continuous and massive impact of market reform on housing consumption in the whole nation since the official ending of housing welfare system in the late 1990s. Also, the data shows salient geographical variations among housing tenure statuses and conditions; the eastern region has spearheaded the housing market reform in China. In addition, housing inequalities in first tier cities including Beijing, Shanghai, Shenzhen and Guangzhou are also evident.

The multivariate analysis further supports the aforementioned results. It was found that housing inequalities in Chinese cities can be attributed to many institutional and socioeconomic factors. Consistent with Liu et al.'s (2012) study of Nanjing city, the study also confirms the dual mechanisms that include the heritage of the socialist system and emerging market dynamics of housing inequality across all Chinese cities. First, life cycle factors such as age and marriage have a strong impact on housing conditions and housing tenure status. In particular, older people are better off under market transitions because they are able to benefit from the pre-reform socialist welfare system. Second,

socioeconomic factors such as education attainment and income have become an important determinant of housing conditions and housing tenure status, which implies the increasing significance of market dynamics as in Western countries. Third, institutional relationships among individuals, households, *work units* and CPC connections have influenced people's housing consumption. People working in government and state-owned enterprise are more likely to own houses through purchasing *work-unit* or affordable housing, and their housing conditions fared better. Evidence also addresses the fact that *hukou* status originating in the original socialist system continues to be a significant variable. People without a local urban *hukou,* and rural migrants, are the most disadvantaged groups regarding both homeownership and housing conditions. Using a national level dataset, the empirical analyses further support that geography, to some extent, matters in the process of housing market reform. The eastern region tends to play a vanguard role in market reform in comparison with western and central regions. Beijing, Shanghai, Shenzhen and Guangzhou are four first tier cities in which people are facing more challenges in achieving home ownership because of the high housing price, whereas the quality of housing in these cities is better than second and third tier cities.

The present study has offered valuable information regarding the housing policies in China. Over the years, policy makers in China have viewed housing reform as a success in creating a massive housing market in China, and one that contributes to Chinese economic growth. However, another side of this successful story is that public housing policies concerning the housing demand from low-income people and migrants have received insufficient attention. In this regard, this study also has some important policy implications. First, with a rapid increase of housing prices in Chinese cities,

affordable housing has become a feasible way to homeownership. However, the present study reveals that housing policies in China *de facto* lean toward government employees and people working in state-owned sectors. There is a need to offer affordable housing for those disadvantaged people, and migrant workers in particular, who have faced more challenges in getting access to homeownership and decent housing. Second, policy makers should also consider the heterogeneity of housing consumption in Chinese cities. For example, more subsidies should be offered for young people who are more likely to suffer from skyrocketing housing prices in urban China. Third, this research also provides evidence to address the spatial variations of the housing situation in China. For a large-size nation like China, it is unreasonable to implement one-size-fits-all housing policies.

Finally, this study is limited to the analysis of census data in a single year. More efforts should be put forth to track the changes of housing conditions and housing tenure status in the course of market reform. Rural migrants are poorly housed in Chinese cities (Wang et al., 2010), future research on migrant housing should also be useful to provide more nuanced evidence for policy makers.

REFERENCES

Andersen, H. S. (2011). Motives for tenure choice during the life cycle: The importance of non-economic factors and other housing preferences. *Housing, Theory and Society,28,*183-207.

Arnott, R. (1987). Economic theory and housing. In *Hand book of Regional and Urban Economics*. New York: Elsevier Publishers.

Chan, K. W. (2010). The household registration system and migrant labor in China: Notes on a debate. *Population and Development Review,36,* 357-364.

Chen, J., F. Guo & Y. Wu (2011a). One decade of urban housing reform in China: Urban housing price dynamics and the role of migration and urbanization, 1995-2005. *Habitat International,35,* 1-8.

Chen, J., Q. Hao & M. Stephens (2011b). Assessing housing affordability in post-reform China: A case study of Shanghai. *Housing Studies,25,* 877-901.

Chinese Academy of Social Sciences.(2006-2012). *Chinese Cities' Competitiveness Report.*Beijing China: Social Sciences Academic Press (China).

Clark, W. A. V. (1996). *Households and housing: Choice and outcomes in the housing market*. New Brunswick, N.J.: Center for Urban Policy Research.

Deng, L., Q. Shen & L. Wang (2011). The emerging housing policy framework in China. *Journal of Planning Literature,26,* 168-183.

Edward L., G., M. E. Kahn & J. Rappaport. (2008). Why do the poor live in cities? The role of public transportation. *Journal of Urban Economics,63,* 1-24.

Fan, C. C. (2005). Interprovincial migration, population redistribution, and regional development in China: 1990 and 2000 Census Comparisons. *Professional Geographer,57,* 295-311.

Fan, C. C. (2008). *China on the move: Migration, the state, and the household*.London; New York: Routledge.

Glaeser, E. L., M. E. Kahn & J. Rappaport. (2008). Why do the poor live in cities? The role of public transportation. *Journal of Urban Economics,63,*1-24.

Hanink, D. M., R. G. Cromley & A. Y. Ebenstein (2012). Spatial variation in the determinants of house prices and apartment rents in China. *Real Estate Finance and Economics,45,*347-363.

He, S., Y. Liu, F. Wu & C. Webster (2010). Social groups and housing differentiation in China's urban villages: An institutional interpretation. *Housing Studies,25,* 671-691.

Henderson, J. V. & Y. M. Ioannides (1983). A Model of housing tenure choice. *The American Economic Review,73,* 98-113.

Henderson, J. V. & Y. M. Ioannides (1986). Tenure choice and the demand for housing. *Economica,53,* 231-246.

Hu, F., Z. Xu & Y. Chen (2011). Circular migration, or permanent stay? Evidence from China's rural-urban migration *China Economic Review,22,* 64-74.

Huang, Y. (2004). The road to homeownership: A longitudinal analysis of tenure transition in urban China (1949–94). *International Journal of Urban and Regional Research,28,*774-795.

Huang, Y. & W. Clark (2002). Housing tenure choice in transitional urban China: A multilevel analysis. *Urban Studies,39,* 7-32.

Huang, Y. & C. Yi (2010). Consumption and tenure choice of multiple homes in transitional urban China. *European Journal of Housing Policy,10,*105-131.

Huang, Y. & C. Yi (2011). Second home ownership in transitional urban China. *Housing Studies,26,* 423-447.

Li, B. & Y. Zhang (2011). Housing provision for rural–urban migrant workers in Chinese cities: The roles of the state, employers and the market. *Social Policy & Administration,45,* 694-713.

Li, P. (2011). China's new stage of development. *China: An International Journal,9,* 133-143.

Li, S.-M. (2000a). Housing consumption in urban China: A comparative study of Beijing and Guangzhou. *Environment and Planning A,32,*1115-1135.

Li, S.-M. (2000b). The housing market and tenure decisions in Chinese cities: A multivariate analysis of the case of Guangzhou. *Housing Studies,15,* 213-236.

Li, S.-M. & Y. Huang (2006). Urban housing in China: Market transition, housing mobility and neighbourhood change. *Housing Studies,21,* 613-623.

Li, S.-M. & L. Li (2006). Life course and housing tenure change in urban China: A study of Guangzhou. *Housing Studies,21,* 653-670.

Li, Y. & Y. H. D. Wei (2010). The spatial-temporal hierarchy of regional inequality of China. *Applied Geography,30,*303-316.

Li, Z. (2010). Housing conditions and housing determinants of new migrants in Chinese Cities. *Chinese Sociology and Anthropology,43,*70-79.

Liu, Y., S. He & F. Wu (2012). Housing differentiation under market transition in Nanjing, China. *The Professional Geographer, 64,*554-571.

Myers, D. (1999). Demographic dynamism and metropolitan change: Comparison of Los Angeles, New York, Chicago, and Washington, D.C. *Housing Policy Debate 10,* 4.

Portes, A. & R. G. Rumbaut. (2001). *Legacies: The story of the immigrant second generation*. Berkeley: University of California Press; New York: Russell Sage Foundation.

Richard, K. G. & S. Malpezzi. (2003). *A primer on U.S. housing markets and housing policy*. Washington: Urban Institute Press.

Stephens, M. (2010). Locating Chinese urban housing policy in an international context. *Urban studies (Edinburgh, Scotland),47,*2965.

Sun, M. & C. C. Fan (2011). China's permanent and temporary migrants: Differentials and changes, 1990–2000. *The Professional Geographer,63,* 92-112.

Tong, Z. Y. & R. A. Hays (1996). The transformation of the urban housing system in China. *Urban Affairs Review,31,* 625-658.

Wang, Y. P. & A. Murie (1996). The process of commercialisation of urban housing in China. *Urban Studies,33,* 971-990.

Wang, Y. P. & A. Murie. (2000). Social and spatial implications of housing reform in China. *International Journal of Urban and Regional Research,24,* 397-417.

Wang, Y. P.& J. Wu (2010). Housing migrant workers in rapidly urbanizing regions: A study of the Chinese model in Shenzhen. *Housing Studies,25,* 83-100.

Wu, F. (2005). Rediscovering the 'Gate' under market transition: From work-unit compounds to commodity housing enclaves. *Housing Studies,20,*235-254.

Wu, F. (2007). *Urban development in post-reform China: State, market, and space*.London; New York: London; New York: Routledge.

Wu, W. (2002). Migrant housing in urban China: Choices and constraints. *Urban Affairs Review,38,* 90-119.

Wu, W. (2004). Sources of migrant housing disadvantage in urban China. *Environment and Planning A,36,* 1285-1304.

Xu, F. (2008). Gated communities and migrant enclaves: The conundrum for building 'harmonious community/ shequ.'*Journal of Contemporary China,17,*633-651.

Yip, N. M. (2012). Walled without gates: Gated communities in Shanghai. *Urban Geography,33,*221-236.

Yu, Z. (2006). Heterogeneity and dynamics in China's emerging urban housing market: Two sides of a success story from the late 1990s. *Habitat International,30,*277-304.

Yu, Z. & G. Painter (2010). Immigrants and housing markets in mid-size metropolitan areas. *International Migration Review,44,*442-476.

Yu, Z., G. Painter & L. Yang (2003). Heterogeneity in Asian American homeownership: the impact of household endowments and immigrant status.*Urban Studies,40,*505-530.

Zhao, L. (2011). Understanding the new rural co-operative movement: Towards rebuilding civil society in China. *Journal of Contemporary China,20,*679-698.

Zhao, Y. & S. C. Bourassa (2003). China's urban housing reform: Recent achievements and new inequities. *Housing Studies, 18,* 721-744.